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comprehension. In all of this work on alternating-current apparatus the assumption that the electro-motive force and the currents follow simple sine curves is made; and, while the error in the assumption may or may not affect conclusions as to the types of action that occur, yet it must vitiate any attempt to deduce absolute values. Up to the present the subject of alternating currents has been singularly barren of experiments, while quite a number of problems have been solved by analytical and graphical methods. It is well known that a great many effects are not taken into account in the ordinary treatment, but the value of these outside effects has not been determined. The full discussion of these papers has not reached this side of the ocean: what has reached us is interesting and important, and will be given when the rest of it arrives.

#### BOOK-REVIEWS.

*Chambers's Encyclopædia.* New ed. Vol. I. A to Beaufort. Philadelphia, Lippincott. 8°. \$3.

THE original issue of this work was completed twenty years ago, and few works of the kind have enjoyed an equal popularity, or rendered better service to the mass of readers. It is, of course, not to be compared in elaborateness with the *Britannica*, the articles in which are often in the form of lengthy treatises; but for non-professional readers, who do not wish to make a special study of the various branches of knowledge, but seek for general information on all subjects that arise in reading and conversation, this work has proved very valuable. The progress of events, however, and the increase of knowledge in almost every branch, have necessitated a new edition, the publication of which has now begun. Many articles have been rewritten, and others partially so, while all have been subjected to a careful scrutiny by competent hands; and the result, so far as we have examined the work, seems to be excellent. Considerable attention has been given to American subjects, the more important of which have been treated by American writers; and their articles have been copyrighted in the United States by the J. B. Lippincott Company of Philadelphia, who publish the encyclopædia in this country. There is an article, however, on Americanisms in language, by an Englishman, Mr. Grant Allen, which contains some great mistakes. Thus, he says that "the speech and writing of the uncultivated classes diverge increasingly from the pure literary English standard;" the fact being that the language of the uncultivated Americans tends increasingly towards the literary standard, owing to the influence of the public schools and the growing taste for good reading. But most of the articles on American subjects are very good. One of the most difficult tasks in preparing an encyclopædia is to allot the right proportion of space to the various subjects treated, and in this respect the editors of this work have been quite successful. If the remaining volumes are up to the standard of the first, the encyclopædia will deserve and receive a renewal of the favor it has hitherto enjoyed.

*Familiar Animals and their Wild Kindred.* By JOHN MONTEITH. Cincinnati and New York, Van Antwerp, Bragg, & Co. 16°.

THE idea of presenting school-readers for youthful scholars, treating of familiar topics in natural science, is not a new one, but it is a thoroughly good one. The writer well remembers the permanent interest in every thing pertaining to natural history engendered in him by the use of the Wilson series of readers in years gone by. Such reading-exercises have been improved since that time, however, though there is still room for improvement. In no way, in the hands of a good teacher, can a child's powers and aptitude for self-observation be better stimulated than by well-prepared reading-exercises treating of the familiar forms of life. The knowledge imparted in such exercises should be accurate and comprehensible, but scarcely less important is the manner in which it is presented. A description that leaves nothing for the child himself to find out, no conclusions for him to draw, is of but secondary value. His faculties for thinking and observing, not his memory, need the most training.

The present school-reader, for that is what it is, meets fairly well these requirements, and, taking it all in all, merits commendation. It is intended for children of the third-reader grade, or say from

eight to ten years of age, and is not only interesting, but instructive to them. The habits and anecdotes of the domestic and other familiar animals and their wild kindred are presented in pleasing shape. The material is largely adapted from known writers, or drawn from such authorities as Mivart, and is reliable. The engravings are good. Only mammals are treated of, and nowhere is the erroneous impression corrected that the word 'animals' is synonymous with four-footed mammals.

*A Catalogue of Canadian Birds, with Notes on the Distribution of Species.* By MONTAGUE CHAMBERLAIN. St. John, J. & A. McMillan. 12°.

THIS is an annotated list of the birds hitherto recorded or observed as residents or visitants of the vast and ill-explored region north of the United States. It is in reality the first attempt of the kind, and can only be looked upon as preliminary; but, though only a preliminary list, it has required labor, and will be very useful for future workers in Canadian ornithology, — a branch which, when we consider the excellent work done by the Canadian entomologists and botanists, has been much neglected in the Dominion. Notwithstanding the future revision which this list must be subject to, the author might have added to its value by tabulations after the manner of Merriam's work. By counting, it is ascertained that the whole number of species and sub-species recorded is nearly five hundred and fifty.

*The Story of Creation, a Plain Account of Evolution.* By EDWARD CLODD. London and New York, Longmans, Green, & Co. 12°. \$1.75.

OF book-making on evolution there is yet no end. The present little work, however, presents a claim for recognition, not as an exponent of new views, theories, or facts, — for, as the author very naïvely admits, there is probably not a new idea in it, — but rather as an elementary exposition, a text-book, of the subject. As such, it will hardly find a place on the shelves of either the professed physicist or biologist, save as a fairly good epitome of the materials and methods of evolution in its widest sense. But to him or her who would not decry or accept Darwinism without some knowledge of the subject, and that fashion is happily subsiding, the work can be heartily commended. The author, while treating his subject in a scientific manner, has endeavored to make his book popularly readable; and he has succeeded fairly well, though the compression of so vast a subject into one small volume could hardly fail to produce a text-book-like concentration that will deter the mental dyspeptic. More than half the volume is made up of descriptive matter, both physical and biological, of the earth and the universe: the remainder is explanatory of their development or evolution, including man psychologically. In other words, as already stated, the author strives to give a brief exposition of the materials and methods of evolution in its widest sense. There are numerous good engravings, and the statements of fact, at least on the biological side, are in general fresh and reliable. The author might very properly modify the paleontological fiction of the thirty by one hundred foot Jurassic monster. It has never existed, for aught that is known, save in the describer's imagination: the figures need reduction one-half.

*Practical Physics for Schools.* Vol. I. Electricity and Magnetism. By B. STEWART and W. W. H. GEE. New York, Macmillan. 16°. 60 cents.

MOST physicists and many teachers of physics are already familiar with the two volumes on 'Elementary Practical Physics' by Messrs. Stewart and Gee, and nearly all will agree that they constitute an extremely valuable contribution to the facilities now available for the successful prosecution of instruction in physics by laboratory methods. The small volume now under consideration, since the word 'elementary' is omitted from its title, might be assumed to be more pretentious in its plan and execution than the others.

The contrary is the case, however, as it is intended for a lower grade of work. It is, as the titlepage has it, "for schools and the junior students of colleges."

To a considerable extent the book is an abstract, with simplifications, of the second volume of the other series. It is not entirely